

GUJARAT TECHNOLOGICAL UNIVERSITY
M. E. - SEMESTER – I • EXAMINATION – WINTER • 2013

Subject code: 710807N**Date: 06-01-2014****Subject Name: Advanced Materials and Processes****Time: 10.30 am – 01.00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Define Smart material? Discuss about the engineering applications of Smart material. **07**
- (b) Define the term standardization design for machining. Is it necessary that standardization would always reduce the manufacturing cost? Explain. **07**
- Q.2** (a) What do you mean by metal matrix composite material? Write the applications and example of metal matrix composite material. **07**
- (b) Write design guidelines to be followed for the machining of Rotational components. **07**
- OR**
- (b) Write design guidelines to be followed for the machining of Non-Rotational components. **07**
- Q.3** (a) List the criteria for selecting the type of casting process. **07**
- (b) You have to design a connecting rod for an automobile. Suggest the manufacturing process and criterion for design for manufacturing of it. **07**
- OR**
- Q.3** (a) Explain basic principles of designing for economical production. **07**
- (b) Critically evaluate the methods for material selection. **07**
- Q.4** (a) State difficulties in the processing of advanced materials. Give your thoughts to overcome those difficulties. **07**
- (b) Write a short note for corrosion and its control. **07**
- OR**
- Q.4** (a) Justify the use of solidification simulation in casting design. **07**
- (b) Explain with sketch the important of parting line for design consideration in forging. **07**
- Q.5** (a) Describe the design considerations for extruded parts of plastics **07**
- (b) Explain the effect of High & low temperatures on Performance of materials. **07**
- OR**
- Q.5** (a) Give the guideline with suitable example for each to reduce material consumption in press working. **07**
- (b) Discuss about the Development, Measurement and Mitigation of residual stresses in a welded component. **07**
